

Amendments To Claims

Listing Of Claims

Claims 1-31 (canceled)

32. (currently amended) A system for ~~bonding~~
fabricating external contacts to contact pads on a
semiconductor component & having contact pads and
conductive traces in electrical communication with the
contact pads comprising:

a mask on the component having a plurality openings
aligned with the contact pads and some of the conductive
traces;

a plurality of balls;

a flux configured for deposition into the openings and
onto the contact pads as a plurality of droplets, the flux
comprising a fluxing agent, a polymer resin, and a curing
agent configured to cure the droplets into a plurality of
polymer support members bonded to the balls, to the
openings and to the mask, and masking at least one
conductive trace; and

a ~~flux dispensing~~ mechanism configured to deposit the
droplets in the openings and on the contact pads, and to
place the balls on the droplets.

~~a polymer flux comprising a polymer resin, a fluxing~~
~~agent and a curing agent; and~~

~~a polymer support member on each contact pad~~
~~comprising a cured droplet of the polymer flux supporting~~
~~an external contact.~~

33. (currently amended) The system of claim 32
further comprising a furnace configured to reflow the balls
onto the contact pads.

~~further comprising a placement mechanism configured to~~
~~place the external contacts on the contact pads.~~

34. (currently amended) The system of claim 32 wherein the flux has non flowing characteristics at a temperature between 15.5°C to 37.8 °C.
~~further comprising a furnace configured to heat the polymer flux.~~

35. (currently amended) The system of claim 32 wherein the mechanism includes a pin transfer mechanism for depositing the droplets.
~~external contacts comprise solder balls.~~

36. (original) The system of claim 32 wherein the polymer resin comprises a material selected from the class consisting of epoxy, silicone and rubber.

37. (original) The system of claim 32 wherein the curing agent comprises a solvent or a reactant and the fluxing agent comprises an acid.

38. (original) The system of claim 32 wherein the curing agent and the fluxing agent comprise a same chemical compound.

39. (currently amended) The system of claim 32 wherein the polymer support members comprise s a donut shaped structures having have a thickness on the contact pad of from one tenth to one half a diameter of the balls.
~~external contact.~~

40. (original) The system of claim 32 wherein the component comprises a semiconductor package, a semiconductor wafer or a semiconductor die.

41. (currently amended) A system for fabricating ~~an~~ external contacts on a semiconductor component having a

plurality of contact pads and conductive traces in electrical communication with the contact pads comprising:

a mask on the component having a plurality openings aligned with the contact pads and some of the conductive traces;

a ~~polymer~~ flux comprising a polymer resin, a plurality of solder particles, a fluxing agent, and a curing agent;

a flux dispensing mechanism configured to deposit a droplets of the ~~polymer~~ flux in the openings and on the contact pads;

a furnace configured to coalesce the solder particles in the droplets into bumps bonded to the contact pads, and to cure the polymer resin in the droplets into polymer support members bonded to the bumps, to the openings and to the mask, and masking at least one conductive trace.

~~a solder bump on the contact pad comprising coalesced solder particles in the droplet; and~~

~~a polymer support member on the contact pad comprising cured polymer resin in the droplet supporting the solder bump.~~

42. (currently amended) The system of claim 41 wherein the flux has a viscosity at 25°C of about 100 to 1500 poise.

~~further comprising a furnace configured to heat the polymer resin and the solder particles to a temperature sufficient to bond the solder particles to the contact pad.~~

43. (original) The system of claim 41 wherein the component comprises a package, a die, or a wafer.

44. (original) The system of claim 41 further comprising a conveyor configured to move the component.

45. (original) The system of claim 41 wherein the fluxing agent comprises an acid and the curing agent comprising a solvent.

46. (currently amended) A system for ~~bonding an fabricating~~ external contacts ~~to a contact pad~~ on a semiconductor component having a plurality of a contact pads and conductive traces in electrical communication with the contact pads comprising:

a mask on the component having a plurality of openings aligned with the contact pads and some of the conductive trace;

a plurality of solder balls;
~~having a diameter;~~

a polymer flux configured for deposition on the contact pads as non flowing droplets, the flux comprising a polymer resin, a fluxing agent and a curing agent;

a ~~flux dispensing~~ mechanism configured to dispense a the droplets in the openings and of the polymer flux on the contact pads and to place the balls on the droplets; and

a furnace configured to heat and bond the balls to the contact pads and to cure the droplets into polymer support members bonded to the balls, to the openings and to the mask and electrically insulating at least one conductive trace.

~~a polymer support member on the contact pad comprising cured polymer resin in the droplet having a thickness which is less than the diameter of the solder ball.~~

47. (currently amended) The system of claim 46 wherein the mechanism includes a pin transfer mechanism for dispensing the flux.

~~further comprising a placement mechanism configured to place the solder ball on the contact pad.~~

48. (original) The system of claim 46 wherein the polymer resin comprises a material selected from the class consisting of epoxy, silicone and rubber.

49. (original) The system of claim 46 wherein the curing agent comprises a solvent or a reactant.

50. (original) The system of claim 46 wherein the fluxing agent comprises an acid.

51. (currently amended) The system of claim 46 wherein the droplets each have ~~has~~ a thickness on ~~the~~ a contact pad of from one tenth to one half a diameter of ~~the~~ solder ~~a~~ ball.

52. (original) The system of claim 46 wherein the component comprises a semiconductor package, a semiconductor wafer or a semiconductor die.

53. (currently amended) A system for ~~bonding a solder ball to a contact pad~~ fabricating external contacts on a semiconductor component having a plurality of contact pads and conductive traces in electrical communication with the contact pads comprising:

a plurality of balls;

a mask comprising a plurality of openings aligned with the contact pads and some of the conductive traces;

a ~~polymer~~ flux comprising a polymer resin, a fluxing agent and a ~~cleaning~~ curing agent, the flux configured for deposition into the openings and onto the contact pads as non flowing droplets which cover the openings; and

~~a flux dispensing mechanism configured to deposit a droplet of the polymer flux onto the contact pad;~~

~~a placement mechanism configured to push the solder ball through the droplet into contact with the contact pad; and~~

~~a donut shaped plurality of polymer support members on the contact pad encompassing a base of the solder ball, the member in the openings comprising cured polymer resin in the droplets bonded to the balls, to the openings and to the mask, and masking at least one conductive trace. resin in the droplet.~~

54. (currently amended) The system of claim 53 further comprising a flux dispensing mechanism configured to deposit the droplets into the openings and onto the contact pads. ~~wherein the flux dispensing mechanism comprises an element selected from the group consisting of a positive displacement mechanism, a screen printing mechanism and a pin transfer mechanism.~~

55. (currently amended) The system of claim 53 further comprising a furnace configured to reflow the ~~solder~~ balls and cure the droplets.

56. (currently amended) The system of claim 53 wherein the ~~polymer~~ flux has non flowing characteristics at a temperature between 15.5°C to 37.8 °C.

57. (currently amended) The system of claim 53 wherein the fluxing agent has a volume percentage in the droplets of from 0.1% to 16%.

58. (new) A system for fabricating ~~an~~ external contacts on a semiconductor component having a contact pads and conductive traces in electrical communication with the contact pads comprising:

a mask comprising a plurality of openings aligned with the contact pads and some of the conductive trace;

a ~~polymer~~ flux comprising a polymer resin, a plurality of solder particles, a fluxing agent, and a curing agent;

a ~~flux dispensing~~ mechanism configured to deposit a droplets of the ~~polymer~~ flux into the openings and on the contact pads;

a furnace configured to heat the component and the droplets;

a plurality of solder bumps on the contact pads comprising coalesced solder particles in the droplets; and

a plurality of polymer support members ~~on the contact pad~~ in the openings comprising cured polymer resin in the droplets bonded to the mask, to the openings and to the solder bumps and masking at least one conductive trace.

~~encompassing a base of the solder bump.~~

59. (currently amended) The system of claim 58 wherein the ~~flux dispensing~~ mechanism comprises a screen and a squeegee.

60. (currently amended) The system of claim 58 wherein the ~~polymer~~ flux has non flowing characteristics at a temperature between 15.5°C to 37.8 °C.

61. (currently amended) The system of claim 58 wherein the fluxing agent has a volume percentage in the droplets of from 0.1% to 16%.

62. (currently amended) The system of claim 58 wherein the furnace ~~comprises a~~ includes two or more stages.
~~furnace.~~